

ABSTRACT OF THE DISCLOSURE

5 A method of forming an air gap or gaps within solid structures and specifically
semiconductor structures to reduce capacitive coupling between electrical elements such
as metal lines, wherein a sacrificial material is used to occupy a closed interior volume in
a semiconductor structure is disclosed. The sacrificial material is caused to decompose
into one or more gaseous decomposition products which are removed, in one
10 embodiment by diffusion, through an overcoat layer. The decomposition of the sacrificial
material leaves an air gap or gaps at the closed interior volume previously occupied by
the sacrificial material. The air gaps may be disposed between electrical leads to
minimize capacitive coupling therebetween.

 Also disclosed are methods of forming multi-level air gaps and methods of forming
15 over-coated conductive lines or leads wherein a portion of the overcoating is in contact
with at least one air gap.